Docket No.: 066396-0057 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of	:	Customer Number: 20277
David A. JACKSON, et al.	:	Confirmation Number: 2568
Serial No.: 10/667,522	:	Group Art Unit: 2859
Filed: September 23, 2003	:	Examiner: Amy R. Cohen

For: TARGET ILLUMINATION OUTSIDE HUMAN VISIBILITY

TRANSMITTAL OF APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith is Appellant's Appeal Brief in support of the Notice of Appeal filed February 28, 2007. Please charge the Appeal Brief fee of $500.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due under 37 C.F.R. 1.17 and 41.20, and in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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APPEAL BRIEF

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Commissioner for Patents
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Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed February 28, 2007, wherein Appellant appeals from the Primary Examiner's rejection of claims 1-10, 12, 13 and 15-31.

Real Party In Interest

This application is assigned to Snap-on Technologies, Inc. by assignment recorded on September 23, 2003, at Reel 014573, Frame 0575.

Related Appeals and Interferences

Appellants are unaware of any related Appeal or Interference.

Status of Claims

Claims 11 and 14 are cancelled. Claims 1-10, 12, 13 and 15-31 are pending in this Application. Claims 1-10, 12, 13 and 15-31 have been at twice rejected as of the Office Action issued on November 30, 2006 (hereinafter the "Office Action"). It is from the rejections of claims 1-10, 12, 13 and 15-31 in the Office Action that this Appeal is taken.

Status of Amendments

An Amendment under 37 CFR 1.116 (hereinafter "Amendment after Appeal") is filed concurrently herewith to address a formality objection of claim 3 raised in the Office Action. Entry of the amendment is pending.

Summary of Claimed Subject Matter

Independent Claim 1

Claim 1 describes an image-based position determination system, such as a wheel alignment system, that utilizes at least one invisible light source to shine invisible light onto targets attached to an object, such that the invisible light is retro-reflected to an image sensing device, such as a camera, to form an image of the targets. The system determines positional parameters, such as wheel alignment parameters, based on the image of the targets. Exemplary discussions related to claim 1 can be found in, for instance, Figs. 1, Paragraphs [0011] and [0028]-[0032].

Grounds of Rejection To Be Reviewed By Appeal

Claims 1, 2, 4-9, 12, 13, 15-18 and 20-28 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,724,743 issued to Jackson (hereinafter "Jackson") in view of U.S. Patent No. 6,115,927 issued to Hendrix (hereinafter "Hendrix"). Claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Hendrix, Jackson and further in view of U.S. Patent No. 5,923,027 issued to Stam et al. (hereinafter "Stam"). Claims 3, 19 and 29-31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Jackson and Hendrix, and further in view of U.S. Patent No. 4,614,866 issued to Liss et al. (hereinafter "Liss").

Argument

For the convenience of the Honorable Board of Patent Appeals and Interferences (the "Board"), Appellants only separately argue the patentability of independent claim 1 and dependent claim 30. Accordingly, if the Amendment after Appeal is not entered, claims 2, 4-10, 12, 13, 15, 16, 17, 18 and 20-28 stand or fall with independent claim 1, and claims 3, 19, 29 and 31 stand or fall with claim 30. However, if the Amendment after Appeal is entered, claims 2, 4-7, 12, 13, 15, 16, 17, 18, and 20-28 stand or fall with independent claim 1, and claims 3, 8-10, 19, 29 and 31 stand or fall with claim 30.

Claims separately argued

Claim 1.

Groupings of claims argued:

Claims 1-10, 12, 13 and 15-31.

Initially, Appellants note that claims 2-10, 12, 13 and 15-31 stand or fall with independent claim 1.

Legal precedent is well developed on the subject of obviousness in the application of a rejection under 35 U.S.C. §103. It is incumbent upon the examiner to factually support a conclusion of obviousness. *In re Mayne,* 104 F.3d 1339, 41 USPQ2d 1451 (Fed. Cir. 1997*); In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). The examiner must provide a reason why one having ordinary skill in the art would have been led to modify a particular prior art reference in a particular manner to arrive at a particular claimed invention; *Ecolochem Inc. v. Southern California Edison, Co.* 227 F.3d 361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Rouffet*, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967).

In order to establish the requisite motivation, "clear and particular" factual findings must be made as to a specific understanding or specific technological principle which would have realistically compelled one having ordinary skill in the art to modify a particular reference to arrive at the claimed invention, based upon facts, not generalizations. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 57 UPSQ2d 1161 (Fed. Cir. 2000); *Ecolochem Inc. v. Southern California Edison, Co.* 227 F.3d 361, 56 USPQ2d 1065 (Fed. Cir. 2000); *In re Kotzab*, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); *In re Dembiczak*, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999). Whether the prior art may be capable of modification, and what may or may not be known in general, are not determinative per se to establish the requisite realistic motivation for obviousness; see *In re Deuel*, 51 F.3d 1552, 34 USPQ2d 1210 (Fed. Cir. 1995). The question is not what one having ordinary skill in the art could or could not do, but,

rather, why would one having ordinary skill in the art have been realistically impelled by the prior art teachings to deviate from the prior art process described in the background of the present application to arrive at the claimed invention. *Gentry Gallery v. Berkline*, 134 F.3d 1473, 45 USPQ2d 1498 (Fed. Cir. 1998); *In re Fritch*, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992). Reliance upon a problem with the prior art that is only recognized and disclosed by the present application for a basis of motivation under 35 U.S.C. § 103 is no more than inappropriate hindsight reconstruction using appellant's disclosed invention as a guide. *In re Warner*, 379 F.2d 1011, 154 USPQ 173 (CCPA 1967). Further, the teachings, motivations or suggestions to combine references must be based on objective evidence of record and cannot be resolved on subjective belief and unknown authority. *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

Applicants submit that the record has not met the established criteria for a determination of obviousness under 35 U.S.C. § 103.

Independent claim 1, reproduced below, describes:

> A three-dimensional camera based position determination system, comprising:
> an optically scannable target device fixedly attached to a target object;
> at least one camera and light subsystem, each subsystem having:
> an image sensing device configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device; and
> at least one invisible light emitting diode operatively coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed invisible light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target;
> and
> a data processing device operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image.

For example, an exemplary system as shown in Fig. 1 uses an invisible light source (invisible LEDs 710 in Fig. 7) to **shine** invisible light **onto** an optically scannable target, such that the invisible light is **retro-reflected** to an image sensing device, such as a camera, to form an image of the target. A

data processing device is provided to determine the orientation of the target object based on the generated target image. Exemplary discussions related to claim 1 can be found in, for instance, Figs. 1, Paragraphs [0011] and [0028]-[0032] .

Appellants submit that there is no sufficient teaching to specifically modify Jackson with Jackson to meet every limitation of claim 1.

In combining Jackson with Hendrix, the Office Action contended that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have the light emitting diodes of Jackson include at least one invisible light emitting diode, as taught by Hendrix." See page 4, fourth paragraph of the Office Action. However, as disclosed in Hendrix, **electromagnetic radiation emitters 14** and **camera 16 need** to work in **pair** such that the electromagnetic radiations emitted by the electromagnetic radiation emitters 14 are **directly** detected by camera 16. See Fig. 2 and Col. 4, lns. 46-49 of Hendrix. As Hendrix's electromagnetic radiation emitters 14 are used as a "target" being viewed by camera 16, the use of electromagnetic radiation emitters 14 excludes the need for a conventional target. The only viable construction to use electromagnetic radiation emitters 14 in Hendrix is to **replace** the scannable target in Jackson. In other words, the electromagnetic radiation emitters 14 in Hendrix work as "targets" in Jackson to be viewed by camera 16. Under this construction, Hendrix's electromagnetic radiation emitters 14 are not used to **"shine"** a target as described in the claim 1, and camera 16 does not receive any retro-reflected invisible light, and form any image of any target based on the retro-reflected invisible light, as described in the claim 1.

Despite the fact that the **electromagnetic radiation emitters 14** have to work in **pair** with camera 16, and the lack of specific teaching to use invisible light sources to **"shine"** a target such that retro-reflected invisible light is received by camera 16, the Office Action arbitrarily picked **electromagnetic radiation emitters 14** to replace the visible source in Jackson by alleging that

"Hendrix discloses that invisible and visible light are alternative and functionally equivalent in the use of the device (Hendrix, Col. 5, lines 5-12)." See page 4, fourth paragraph of the Office Action. However, this allegation and reliance on the cited section of Hendrix are misplaced.

The specific section relied on by the Examiner recites "[a]lthough the described embodiments involve the use of infrared light, it is understood that any wavelength of electromagnetic radiation, whether or not visible to the eye, may be used." See Hendrix Col. 5, lines 5-8. Thus, the teaching from the cited section is to replace the use of "infrared light" with a visible radiation source, not the other way around. The cited section does not specifically teach replacing a visible light source with electromagnetic radiation emitters 14.

Accordingly, the combination of Jackson and Hendrix fails to disclose illuminating an optically scannable target **using invisible light**, such that the invisible light is **retro-reflected** to an image sensing device to form an image of the target, as described by claim 1. Therefore, Jackson and Hendrix cannot support a prima facie case of obviousness. Claim 1 is patentable over the combination of Jackson and Hendrix.

Stam and Liss were relied on by the Office Action for its purported use of CMOS-based cameras and a visual indicator to indicate whether low power laser of a therapeutic device is working properly, respectively. Neither Stam nor Liss alleviates the deficiencies of Hendrix and Jackson. Accordingly, claim 1 is patentable over Jackson and Hendrix even if they are further combined with Stam.

Reversal of the obviousness rejection of claim 1 is respectfully solicited. As claims 2-10, 12, 13 and 15-31 stand or fall with independent claim 1, reversal of the rejections of claims 2-10, 12, 13 and 15-31 is also solicited.

Conclusion

For all of the foregoing reason, Appellant respectfully submits that the grounds of rejection of the claims on appeal is in error and should be reversed.

CLAIMS APPENDIX

1. A three-dimensional camera based position determination system, comprising:

an optically scannable target device fixedly attached to a target object;

at least one camera and light subsystem, each subsystem having:

an image sensing device configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device; and

at least one invisible light emitting diode operatively coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed invisible light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target;

and

a data processing device operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image.

2. The position determination system as recited in Claim 1, wherein the invisible light is infrared light.

3. The position determination system as recited in Claim 2, wherein the visible indicator emits light within the visible spectrum, and thereby indicates that the at least one invisible light emitting diode is operative.

4. The position determination system as recited in Claim 1, wherein the at least one invisible light emitting diode is an array of light emitting diodes.

5. The position determination system as recited in Claim 4, wherein the number of invisible light emitting diodes in the array is sixty-four.

6. The position determination system as recited in Claim 4, wherein the number of invisible light emitting diodes in the array is eighty.

7. The position determination system as recited in Claim 1 wherein the target object is a vehicle wheel, and the data processing device is further configured to determine proper wheel alignment based on orientation of the vehicle wheel.

8. The position determination system as recited in Claim 3, wherein the image sensing device includes an electronic shutter that is synchronized with the at least one strobed light emitting diode such that an image is captured only when a target is illuminated.

9. The position determination system as recited in Claim 8, wherein the image sensing device is a charge-coupled device video camera.

10. The position determination system as recited in Claim 8, wherein the image sensing device is a complimentary metal oxide semiconductor camera.

11. (Cancelled)

12. The position determination system as recited in Claim 1, further comprising:

a current source configured to supply a current to the at least one invisible light emitting diode.

13. A three-dimensional camera based position determination system, comprising:

an optically scannable target device fixedly attached to a target object;

at least one camera and light subsystem, each subsystem having:

an image sensing device configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device; and

at least one light emitting diode operatively coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed invisible light thereby illuminating the optically scannable target such that the invisible light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target;

a data processing device operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image; and

a target object indicator, disposed on the camera and light subsystem, configured to display the status of target acquisition by the data processing device, wherein the status of target acquisition indicates whether an obtained image of the scannable target device is acceptable.

14. (Cancelled)

15. The position determination system as recited in Claim 13, further comprising:

a directional indicator for indicating a manner by which the target object should be manipulated.

16. The position determination system as recited in Claim 15, wherein:

the target object is a vehicle; and

the directional indicator indicates whether the vehicle should be moved forward or backward, or whether a wheel of the vehicle should be steered right or left.

17. A three-dimensional camera based position determination system, comprising:

sensing means for sensing an image of a target device, and generating image information indicative of geometric characteristics of the target device; and

emission means for emitting strobed invisible light that illuminates the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target; and

data processing means for determining the orientation of the target object based on the generated target image.

18. The position determination system as recited in Claim 17, wherein the invisible light is infrared light.

19. The position determination system as recited in Claim 31, wherein the visible indicator means emits light within the visible spectrum, and thereby indicates that the emission means is operative.

20. The position determination system as recited in Claim 17, wherein the target object is a vehicle wheel, and the data processing means is configured to determine proper wheel alignment based on orientation of the vehicle wheel.

21. The position determination system as recited in Claim 17, wherein the image sensing means includes an electronic shutter that is synchronized with the emission means such that an image is captured only when a target is illuminated.

22. The position determination system as recited in Claim 17, further comprising:

attachment means for fixedly attaching an optically scannable target device to a target object.

23. The position determination system as recited in Claim 17, further comprising:

directional means for indicating the direction in which a target object should be repositioned, and for indicating that a target object has been properly positioned.

24. The position determination system as recited in Claim 17, further comprising:

target object indicator means for indicating that the sensing means is sensing the target object.

25. The position determination system as recited in Claim 17, further comprising:

target object indicator means for indicating the state of target acquisition by the data processing device.

26. An image-based position determination system for optically scanning a target device related to an object, the system comprising:

at least one camera and light subsystem, each subsystem having:

an image sensing device configured to view the target device and to generate image information indicative of geometric characteristics of the target device;

at least one light emitting diode operatively coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed light thereby illuminating the target device such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target; and

a visual indicator for indicating a manner by which the object should be manipulated such that the image sensing device obtains an image of the target device in a different position; and

a data processing device configured to couple to the visual indicator and the image sensing device to determine the orientation of the object based on the generated target image.

27. An image-based position determination system for optically scanning a target device related to an object, the system comprising:

at least one image sensing and light subsystem, each subsystem having:

image sensing means for viewing the target device and for generating image information indicative of geometric characteristics of the target device;

light emitting means for emitting strobed light thereby illuminating the target device such that the light is retro-reflected to the image sensing means and the image sensing means detects and forms an image of the target; and

visual indicator means for indicating a manner by which the object should be manipulated such that the image sensing means obtains an image of the target device in a different position; and

a data processing device configured to couple to the visual indicator means and the image sensing means to determine the orientation of the object based on the generated target image.

28. A three-dimensional camera based position determination system, comprising:

an optically scannable target device fixedly attached to a target object;

at least one camera and light subsystem, each subsystem having:

an image sensing device configured to view the optically scannable target device and to generate image information indicative of geometric characteristics of the target device;

at least one light emitting diode operatively coupled to a strobe circuit, the at least one diode and circuit being configured to emit strobed light thereby illuminating the optically scannable target such that the light is retro-reflected to the image sensing device and the image sensing device detects and forms an image of the target; and

directional means for indicating the direction in which the target object should be repositioned, and for indicating whether the target object has been properly positioned;

a data processing device operatively coupled to the image sensing device, the data processing device being configured to determine the orientation of the target object based on the generated target image; and

a target object indicator that displays the status of target acquisition by the data processing device, wherein the status of target acquisition indicates whether an obtained image of the scannable target device is acceptable.

29. The system of claim 30, wherein the visible indicator is disposed in the camera and light subsystem.

30. The system of claim 1 further including a visible indicator that conclusively indicates whether the at least one invisible light emitting diode is operative.

31. The system of claim 17 further including visible indicator means for conclusively indicating whether the emission means is operative.

EVIDENCE APPENDIX

Not Applicable

RELATED PROCEEDINGS APPENDIX

Not Applicable